

DETAILED ACTION

Applicants' request for continued examination of January 21, 2011, in response to the action of July 23, 2010, is acknowledged. It is acknowledged that claims 56 and 57 have been cancelled, no claims have been amended, and no claims have been added. Claims 46-55 and 58-64 are pending. The elected invention is directed to the protease polypeptide of SEQ ID NO: 2 and variants thereof. Claim 61 was previously withdrawn as being directed to non-elected subject matter. Claims 46-55, 58-60, and 62-64 are encompassed by the elected invention, directed to the protease polypeptide of SEQ ID NO: 2, and are hereby examined.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Rejection of Claims 46-55, 58, 59, and 62-64 under 35 U.S.C. 102(b) as being anticipated by Isono et al, 1972 as evidenced by Isono et al, 1972 and Esaki et al, 1994 for the reasons explained in the prior actions, is maintained.

In support of their request that said rejection be withdrawn, Applicants provide the following arguments. These arguments are not found to be persuasive for the reasons following each argument.

(A) As a preliminary matter, Applicants respectfully submit that the Examiner no longer appears to maintain a rejection of the instant claims on the basis of Isono et al's disclosure of

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Fusarium sp. S-19-5 (IFO 8884). If another position is intended, Applicants respectfully request that the Examiner so clarify in the next Office Communication.

(A) Reply: As explained in the Action of September 18, 2009: “Both US5,543,322 and Morita et al characterized a protease from *Fusarium* sp. S-19-5 (IFO 8884), which is a different strain than the one used by Isono et al (Table 5; IFO 5232).” (Reply (A) therein). Thus, the instant rejection is not based on *Fusarium* sp S-19-5 (IFO 8884).

(B) With regards to the Isono et al. disclosure of *Fusarium solani* (IFO 5232), Applicants incorporate by reference in the entirety their prior arguments traversing the rejection, and provide the following additional comments, as well as the Declaration of Dr. Jorgen Knotzel Under 37 CFR 1.132 ("Knotzel Declaration") submitted herewith.

(B) Reply: Applicants' incorporation by reference, in entirety, their prior arguments as well as the Declaration of Dr. Jorgen Knotzel Under 37 CFR 1.132 are acknowledged.

(C) Example 6 and Table 5 of Isono et al. state that "[i]n the same manner as in Example 1, “*F. solani* (IFO 5232) is cultivated, the culture is centrifuged to give supernatant fluid which is used as an enzyme solution, and enzyme activity with and without detergent is demonstrated from this alkaline protease-producing microorganism”. See Isono et al., Example 6 and Table 5 (col. 7, line 41 to col. 8, line 5, reproduced below for the Examiner's convenience). In particular, Table 5 at col. 7, lines 68-69 demonstrates that protease activity is measurable in an *F. solani* fermentation broth both in the absence of and in the presence of LAS-detergent.

(C) Reply: It is acknowledged that Isono et al isolate the *F. solani* IFO 5232 proteases by centrifugation and measure the activity in the absence of and in the presence of LAS-

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detergent. It is noted that, as acknowledged by Applicants (instant response, pg 6, ¶1) Table 5 of Isono et al teaches that *F. solani* IFO 5232 proteases are stable in LAS-detergent.

(D) In direct contrast, as determined in the Knotzel Declaration, the *F. solani* protease of SEQ ID NO: 2 has essentially no activity in the presence of LAS-detergent. In other words, the LAS- detergent inhibits any activity of the claimed trypsin-like protease. See, Knotzel Declaration, ¶8.

(D) Reply: It is acknowledged that the Knotzel Declaration asserts that: “Trypsin *Fusarium solani* of the patent application in LAS-detergent showed no activity”. It is assumed that said assertion is referring to the protein of SEQ ID NO: 2.

(E) The results outlined in the Knotzel Declaration were obtained by reproducing the experimental protocol of Isono et al. and testing Applicants' claimed protease in the presence of LAS-detergent. As noted in the Knotzel Declaration, LAS-detergent (also called Detergent 1) was prepared according to Example 6 and Table 1 of Isono et al. in order to include 25% of LAS (surfactant), 40% sodium tri-phosphate, 29% sodium sulphate, 5% sodium silicate and 1% carboxymethyl cellulose. Compare Knotzel Declaration, Paragraph 5 with the ingredient listing of Table 1 of Isono et al.

(E) Reply: Regarding the Knotzel Declaration , the following is acknowledged. A stock solution of 25% LAS (2747g/100ml; 27g/ml) was prepared. It is acknowledged that the declaration further states:

“Stock made 10 times diluted, and the stock is further diluted before use according to Isono et al: 500mg LAS-detergent in 20mL 0.05M TRIS-HCl pH 11.”

This statement is indefinite for failing to particularly point out and distinctly state how the stock solution was diluted for the following reasons.

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(i) The first phrase states that the stock solution was diluted 10-fold, i.e., to a concentration of 2.7g/ml, and then further diluted. The specifics of this final dilution are not stated.

(ii) The final phrase states that the final concentration of the solution was 500mg LAS-detergent in 20mL, i.e., 25 mg/ml.

(iii) Isono et al teaches that they dissolved 5mg of detergent into 2ml, for a final concentration of 2.5 mg/ml.

Thus, the Knotzel Declaration fails to clearly teach that they used the same concentration of LAS used by Isono et al. For this reason the results presented in Tables 1-4 of the Knotzel Declaration cannot be evaluated/compared to the teachings of Isono et al. It is noted that results of the Knotzel Declaration calls into question the utility of the inventions recited in Claims 59-61 herein, i.e., detergent compositions and methods of using detergent compositions.

(F) The activity of the claimed *F. solani* trypsin protease of SEQ ID NO: 2 and of a control trypsin protease known to have activity in the presence of LAS-detergent was then evaluated in the presence of TRIS pH 11 buffer and in the prepared LAS-detergent following the experimental protocol of Isono et al. The control trypsin protease is from the same family (S1A) as the *F. solani* trypsin protease, is known to have wash performance in LAS-containing detergents, and was included in order to see at which concentrations a trypsin protease would work in the Isono assay, because it is not clear at which concentration the proteases are measured in Isono et al. Kn6tzel Declaration, Paragraph 6.

The results of the experiments are set forth in Paragraph 7 of the Kn6tzel Declaration. As set forth in Tables 3-4 and Figure 1 of Paragraph 7, Trypsin *Fusarium solani* of the patent

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application in LAS-detergent showed no activity when tested at the same concentrations as those that showed a high level of activity in 0.05 M Tris-buffer. Even at a 10-fold concentration increase of *F. solani* trypsin-like protease, essentially no activity was seen in the presence of LAS-detergent. Kn6tzel Declaration, Paragraph 7. Therefore, Applicants' claimed protease is not the same as the proteases of the *F. solani* (IFO 5232) of Isono et al.

Moreover, if Applicants' claimed protease was a component of Isono et al.'s material, as the Examiner alleges, Isono et al.'s material would have lost at least some activity in the presence of LAS-detergent, since Applicants' enzyme is not active in LAS-detergent. However, as Isono et al. states, the LAS-detergent does not inhibit any activity of the enzymes produced. Accordingly, whatever it was that Isono et al. assayed, it did not include Applicants' claimed trypsin-like protease.

(F) Reply: The statements and results set forth in the Knotzel Declaration cannot be evaluated in light of Isono et al for the reasons explained above in Reply (E).

For these reasons and those stated in the prior actions, rejection of Claims 46-55, 58, 59, and 62-64 under 35 U.S.C. 102(b) as being anticipated by Isono et al, 1972 as evidenced by Isono et al, 1972 and Esaki et al, 1994, is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Rejection of Claim 60 under 35 U.S.C. 103(a) as being unpatentable over Isono et al, 1972 in view of Okuda et al, 2004 (FD 12-MAR-2003), for the reasons explained in the prior actions, is maintained.

In support of their request that said rejection be withdrawn, Applicants provide the following arguments. These arguments are not found to be persuasive for the reasons stated in each reply.

(A) As explained in detail above, Isono et al. does not teach or suggest the claimed proteases.

(A) Reply: This argument is not found to be persuasive for the reasons stated above; Reply (A)-(F) for the rejection of Claims 46-55 and 58-64 under 35 U.S.C. 102(b).

(B) Hastrup et al. discloses proteases. However, Hastrup et al. does not disclose Applicants' claimed proteases, and does not teach or suggest detergent compositions comprising the proteases of the present invention, either alone or in combination with Isono et al. and/or Okuda et al.

(B) Reply: As explained above and in the prior actions, it is Isono et al that teaches the protease of SEQ ID NO: 2 in a detergent composition.

(C) Okuda et al disclose a detergent composition comprising an alkaline protease and one or more other enzymes. However, Okuda et al. does not teach or suggest detergent compositions comprising the proteases of the present invention, either alone or in combination with Isono et al. and/or Hastrup et al.

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(C) Reply: Applicants' statement makes no substantive argument. As explained above and in the prior actions, it is the combination of Isono et al, 1972 and Okuda et al, 2004 that teaches the protein of SEQ ID NO: 2 in a detergent composition comprising other enzymes.

For these reasons and those stated in the prior actions, rejection of Claim 60 under 35 U.S.C. 103(a) as being unpatentable over Isono et al, 1972 in view of Okuda et al, 2004 (FD 12-MAR-2003), is maintained.

Allowable Subject Matter

No claims are allowable.

Applicant's amendment necessitated any new grounds of rejection presented in this Office action. Any new references were cited solely to support rejection(s) based on amendment or rebut Applicants' arguments. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Final Comments

To insure that each document is properly filed in the electronic file wrapper, it is requested that each of amendments to the specification, amendments to the claims, Applicants' remarks, requests for extension of time, and any other distinct papers be submitted on separate pages. It is also requested that the serial number of the application be referenced on every page of the response.

It is also requested that Applicants identify support, within the original application, for any amendments to the claims and specification.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHERIDAN SWOPE whose telephone number is 571-272-0943. The examiner can normally be reached on 11a-7:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Mondesi, can be reached on 571-272-0956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/SHERIDAN SWOPE/
Primary Examiner, Art Unit 1652